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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,689	10/29/2003	Ruediger Maestle	860-011555-US/20021086	5065
2512 .	7590	12/29/2005	EXAMINER	
PERMAN & GREEN 425 POST ROAD FAIRFIELD, CT 06824			DETSCHER, MARISSA	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/695,689		MAESTLE, RUEDIGER	
	Examiner		Art Unit	
	Marissa J. Detschel		2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 1,2 and 18 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 is/are allowed.
- 6) ☒ Claim(s) 3-10,12-14,17 and 19-22 is/are rejected.
- 7) ☒ Claim(s) 11 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The amendment filed on December 8, 2005, has been acknowledged by the examiner.

The indicated allowability of claims 9, 10, 12, and 14 are withdrawn in view of the newly discovered reference(s) to Szfraniec et al. (USPN 6,486,961). Rejections based on the newly cited reference(s) follow.

Claims 15 and 16 are not withdrawn from the previous indication of allowable subject matter.

Specification

The disclosure is objected to because of the following informalities: At the end of paragraph 2 on page 1 of the specification, the phrase "Thomas Jensen, and in EP-A-1202038 by the applicant, the teaching thereof shall be incorporated herein by reference" should be "Thomas Jensen, and in EP-A-1202038 by the assignee, the teaching thereof shall be incorporated herein by reference." The applicant for EP-A-1202038 is not Thomas Jensen, but the assignee is Agilent Technologies, being the same assignee as the application being addressed in this office action.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 14, 19, 20, and 21 are rejected under 35 U.S.C. 102(a) as being anticipated by Rosenfeldt et al. (USPN 6,606,15).

Regarding claim 14, Rosenfeldt discloses an apparatus for determining an optical property of a DUT, comprising:

a delay unit (102) adapted for providing a composite signal comprising superimposed signals (18a and 18b) delayed (108) with respect to each other (column 10, lines 1-11); and

a first determination unit (38,40) adapted for determining the optical property of a DUT from a detected DUT response signal, or a signal derived therefrom, wherein the DUT response signal is represents a signal response of the DUT in response to the composite signal or a signal derived therefrom (column 10, lines 10-27),

wherein the delay unit is adapted for deriving the superimposed signals from an incident optical signal (column 10, lines 8-10),

wherein a frequency separation Δf between said delayed signals is determined by analyzing a reference interference pattern of said composite signal, or a signal derived therefrom (column 4, lines 38-43).

The reference interferometer is used to detect any non-linearities in the scanning velocity of the continuously tunable light source. The separation between the frequencies of the signals is dependent on the scanning velocity of the light source. If there are any non-linearities in the scanning velocity, there will be non-linearities in the

frequency separations of the signals. Therefore, this reference interferometer aids in determining the frequency separation between the two signals.

In regards to claim 19, 20, and 21, Rosenfeldt discloses a method for determining an optical property of a device under test comprising:

providing a composite signal by superimposing signals delayed with respect to each other;

detecting a DUT response signal, wherein the DUT response signal represents a signal response of the DUT in response to the composite signal or a signal derived therefrom;

determining the optical property of the DUT from the detected DUT response signal or a signal derived therefrom; and

Regarding claim 19, individually delaying (102) said optical signals via at least two different light paths (18a, 18b) in order to obtain said delayed signals.

Regarding claim 20, sweeping the frequency of an incident signal over a frequency tuning range (Abstract, lines 15-17).

In regards to claim 21, repeating at least once the measurement with a different state of polarization of the superimposed signal (column 3, lines 20-30).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-10, 12, 13, 17, and 22 are rejected under 35 U.S.C. 103(a) as being obvious over Rosenfeldt et al. (USPN 6,605,158) in view of Szfraniec et al. (USPN 6,486,961).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Regarding claims 9, 10, and 12 Rosenfeldt discloses an apparatus for determining an optical property of a DUT, comprising:
a delay unit (102) adapted for providing a composite signal comprising superimposed signals (18a and 18b) delayed (108) with respect to each other (column 10, lines 1-11);
and

a first determination unit (38,40) adapted for determining the optical property of a DUT from a detected DUT response signal, or a signal derived therefrom, wherein the DUT response signal is represents a signal response of the DUT in response to the composite signal or a signal derived therefrom (column 10, lines 10-27), wherein the delay unit is adapted for deriving the superimposed signals from an incident optical signal (column 10, lines 8-10).

Specifically, in regards to claim 9, Rosenfeldt does not disclose said incident optical signal being swept in frequency with a predefined sweep speed over a frequency tuning range. Rosenfeldt discloses that the incident light signal from the source (4) is continuously tuned in respect of frequency (column 5, lines 33-35). This exemplifies a continuously tunable light source. Szfraniec discloses the use of a continuously tunable light source in a device for measuring the group delay of optical components.

Furthermore, the continuously tunable light source is disclosed as being a source that can continuously sweep a predefined range of frequencies without frequency jumps or mode hops. (column 1, lines 41-47) It is further disclosed that this light source is an ideal tunable laser continuously sweeps the predefined range of frequencies uniformly with respect to time (column 7, lines 41-46 and figure 2). Therefore, a continuously tunable light source as disclosed by Rosenfeldt would operate in the same manner as the continuously tunable light source of Szfraniec because it is an ideal source that sends out a signal swept over a frequency range at a continuous predefined rate, as illustrated by the linear relation in Figure 2. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the continuously tunable light

source of Szfraniec's device as the light source of Rosenfeldt's device in order to measure a group delay to detect phase responses of a DUT.

In regards to claim 10, Rosenfeldt does not disclose a frequency separation Δf between said delay signals being varied by varying a sweep speed for sweeping the incident optical signal in frequency. Szfraniec discloses the use of a continuously tunable light source in a device for measuring the group delay of optical components under test (DUTs). Furthermore, the continuously tunable light source is disclosed as being a source that can continuously sweep a predefined range of frequencies without frequency jumps or mode hops. (column 1, lines 41-47) The continuously tunable light source sweeps a predefined range of frequencies at a rate γ (column 6, lines 14-16). As has already been shown, the signal is sent through the device, and is split. One of the split signals is sent through a delay path, while the other is sent through a separate undelayed path. The frequencies for the two split signals can be expressed as

$$\nu_1 = \gamma t + \nu_o \text{ (undelayed)}$$

$$\nu_2 = \gamma t - \gamma \tau + \nu_o \text{ (delayed)}$$

where

ν_o = the initial frequency of the tunable laser source

τ = the round trip delay of the delayed path (column 6, lines 14-25).

The frequency separation of the device is defined as the difference between these two frequencies, $\Delta \nu = \gamma \tau$. (column 6, lines 31-35) This expression contains the variable for

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the sweep speed rate, γ . Therefore, if one varies the sweep speed of the laser, the frequency separation of the signals is varied as well. It would have been obvious of one of ordinary skill in the art at the time of the invention to vary the sweep speed of the continuously tunable laser source of Szfraniec in Rosenfeldt's device in order to vary the frequency separation between the signals and to gain better insight into the optical properties of the device under test.

Regarding claim 12, Rosenfeldt does not disclose detecting a first interference pattern for a first frequency separation Δf_1 between said delayed signals, and wherein a second frequency separation between interference pattern is detected for a second frequency separation Δf_2 said delayed signals. It has been shown, in regards to claim 10, that the frequency separation between the two delayed signals will vary with the sweep speed of the tunable laser source. It would be inherent to change the sweep speed of the tunable laser source of Szfraniec in Rosenfeldt's device in order to detect separate interference patterns for separate frequency separations that can be set by varying the sweep speed of the source.

In regards to claim 3, the light source of Rosenfeldt's device is a tunable light source (column 5, lines 33-35).

In regards to claim 4, the delay unit of Rosenfeldt's device includes a beam splitting unit (104) adapted to split an incident optical signal (18) into at least two optical signals comprising a first signal and a second signal (18a, 18b) (column 9, lines 54-55)

at least two different light paths adapted for delaying (108) said optical signals with respect to each other, in order to obtain at least two delayed signals (18a, 18b) (column 10, lines 1-5)

and a beam-combining unit (106) for forming a composite signal of the two delayed signals by superimposing them (column 10, lines 8-10).

In regards to claim 5, the DUT response signal of Rosenfeldt's device is due to the composite signal being transferred through the DUT (column 10, lines 10-15).

In regards to claim 6, Rosenfeldt's device uses a second determination unit of detectors (132 and 134) detects the optical signal reflected by the DUT (column 10, lines 40-42). The first determination unit of detectors (38 and 40) detects the optical signal transmitted through the DUT (column 10, lines 50-54).

In regards to claim 7, an optical property of the DUT is determined by analyzing an interference pattern of the DUT response signal (column 10, lines 21-23).

Regarding claim 8, the apparatus of Rosenfeldt can detect a variety of optical properties of the DUT, including insertion loss, polarization dependent loss, and principal states of polarization (column 2 line 64 to column 3, line 2).

Regarding claim 13, Rosenfeldt's device includes a reference determination unit (140) that performs a reference measurement of the composite signal (18a, 18b) (column 10, lines 54-61).

In regards to claim 17, Rosenfeldt discloses the use of a first determination unit (38 and 40) that comprises a polarization diversity receiver adapted for detecting an

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interference pattern in dependence on the state of polarization of said DUT response signal. (column 10, lines 21-23).

Regarding claim 22, Rosenfeldt discloses the use of a tunable laser source for providing the incident optical signal (column 5, lines 33-35).

Allowable Subject Matter

Claim 15 is allowed.

Claims 11 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claim 11, the prior art of record, taken alone or in combination, fails to disclose or render obvious the use of a variable delay line for varying a frequency separation between delayed signals, in combination with the rest of the limitations of claim 11.

As to claim 15, the prior art of record, taken alone or in combination, fails to disclose or render obvious the use of an optical modulator to modulate a composite signal of the delayed signals or the DUT response to that signal with an external frequency, in combination with the rest of the limitations of claim 15.

As to claim 16, the prior art of record, taken alone or in combination, fails to disclose or render obvious the splitting of a tunable light source into at least three

optical signals with a polarization controller disposed in the first optical signal and in the third optical signal, in combination with the rest of the limitations of claim 16.

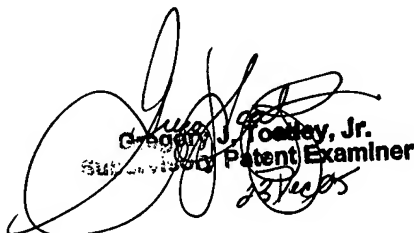
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa J. Detschel whose telephone number is 571-272-2716. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571-272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marissa Detschel
December 22, 2005
MJD


Gregory J. Toatley, Jr.
Supervisor Patent Examiner

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